

presented, are five in number. Barometric pressure of necessity plays the principal part in the arrangement and subdivision of the section. The maps are constructed to exhibit the pressure conditions which obtain in abnormally hot and cold seasons and months in different regions, those which produce recognised types of wind and weather, or accompany typical storms of all kinds. To these are added maps showing the tracks of storms and the distribution of storm frequency, with a final series showing typical distributions of deviations from the normal monthly pressure, upon the study of which the forecasting of the probable weather for a season will be based, as well as the distribution of the mean deviations from these normals. From this description of the contents of the two sections, it will be seen that the atlas is essentially a book of results. It summarises what has been already accomplished by patient effort and long-continued observation, and the result is encouraging. Mr. Buchan, who signs the introduction in his capacity of editor, contends—

"If the present state of the science [of meteorology] as regards the geographical distribution of results be compared with that of the other sciences, such as geology and the biological sciences, it stands second to none. None of these sciences can show such a world-wide distribution of precise results as are collected in this Atlas of Meteorology in illustration of the geographical distribution of temperature pressure, humidity, cloud, rainfall and movements of the atmosphere, with illustrations of their influence over, and inter-relations with each other."

How far this remark is justified must be left to the individual judgment of those who it is hoped will read and digest this first instalment of the Physical Atlas.

W. E. P.

THE NORTH AMERICAN SLIME MOULDS.

The North American Slime Moulds. By Prof. T. H. McBride. Pp. xvii + 231, and plates. (New York: the Macmillan Company. London: Macmillan and Co., Ltd., 1899.)

THE group of organisms known as Myxomycetes, or as Mycetozoa of De Bary and Rostafinski, has of late years received much careful study in the United States. In 1834 Schweinitz published his "Synopsis of North American Fungi," and his large collection of Myxomycetes has been recognised in that country as the standard authority for reference. In 1848 Curtis contributed articles to journals on the subject, and both he and Ravenel made extensive gatherings in the south-eastern States. Since that time American investigators, conspicuous among whom should be mentioned Prof. Peck and the late Dr. G. A. Rex, have done excellent work; new species have been discovered, and large collections have been made in different parts of the States. The professors of botany have brought the Myxomycetes into their course of instruction, and a literature has sprung up founded to a considerable extent on local research.

Prof. McBride, of the University of Iowa, has made an important addition to this literature in the work under notice. In an interesting preface he pays a well-

deserved tribute to the labours of Rostafinski, and we are glad to see that he founds his classification on the lines laid down in Rostafinski's monograph of the Mycetozoa, but he prefers the older name Myxomycetes for the designation of the group. In this he follows Dr. Scott in his admirable book on structural botany; at the same time, Prof. McBride fairly discusses, from a botanist's point of view, the claims that have been advanced for including them in the animal kingdom, and sums up by saying—

"Why call them either animals or plants? The Myxomycetes are independent. All that we may attempt is to assert their nearer kindred with one or other of Life's great branches."

From this standpoint, however, we do not think that the adoption of the name "slime moulds" is a happy one. If, as the professor remarks, their position is "a matter of uncertainty, not to say perplexity," and in the face of the high authority of Rostafinski, under De Bary's supervision, for the name Mycetozoa, an English translation of either word seems to be hardly needed.

The question of nomenclature is perhaps a more burning one in the States than it is with us, where De Candolle's law is very much accepted in practice.

Prof. McBride speaks warmly on the subject on p. 10 of the preface. Instead of adopting the earliest published specific name of a species in the genus in which it now stands, and giving as the authority the name of the person who first placed it in that genus (leaving the history of the first describer to be traced in the unfortunately necessary list of synonyms), he aims at giving the earliest published specific name, under whatever genus it appeared, giving as the authority the name of the first describer in brackets, followed by the name of the placer in the present genus. If an important object in appending the authority were to commemorate the name of the first recorder, we should agree with the professor, and as a matter of sentiment there is much to be said in favour of his view; but if the object in quoting the authority be solely to establish the identity of a species, apart from personal considerations, De Candolle's rule has the advantage of simplicity. The ideal conception of a uniform system of classification universally accepted appears to be unattainable, at least in the present generation, considering the strongly-held and diverging views which now prevail; but Prof. McBride has devoted much labour to searching the oldest records, short and incomplete as many of them are and compiled with the aid of imperfect instruments, and we cannot but admire the thoroughness with which he has endeavoured to carry out his principle.

When we bear in mind the wide variation which we find in many species that offer abundant material for observation, as, for example, in *Physarum nutans* Pers., the adoption of a main centre as the type and the description of diverging forms as varieties appears to be in accordance with the actual facts, and is of assistance to students. Prof. McBride, however, avoids the introduction of varieties, and therefore multiplies the species recorded in his work to an extent which may not meet with universal approval; but it is fair to note that in many cases he leaves the specific value an open question.

On the other hand, in those species which have come under his personal observation—and these embrace a very large proportion of the whole—his descriptions are admirable. We read them with the confidence that they are accurate and drawn from nature; they give us new information and a graphic picture of many species which have seldom or never been recorded in Europe, and it is needless to say that the measurement of spores can be entirely relied upon.

To those who are within reach of the University of Iowa, the fact that the species described are represented by type specimens in the herbarium of that institution is of the utmost value; for, however excellent the description, it is to the type itself that we must fall back as the last resource when so much depends on minute microscopical examination.

The physiology of the Myxomycetes does not appear to have received the careful study in Iowa which we may hope for in the future, considering the wealth of material which the region affords. On more than one occasion Prof. McBride refers to formation of spores as preceding that of the capillitium. On p. 108 he says, in speaking of the capillitium:

"It is necessary to recall the fact that in the best case all such structures of the fructification are but forms of the residue after the formation of the spores."

A laboratory experiment of no great difficulty shows, by a series of stained preparations of maturing sporangia, that the capillitium material, together with the calcareous matter when present, is separated from the spore-plasma before the karyokinetic division of the nuclei takes place preparatory to the formation of the spores; thus the capillitium is formed before the spores.

With regard to the systematic part, Prof. McBride's work must take a pre-eminent position as a guide for students in America, and its value will not be confined to those on the other side of the Atlantic. We lay the book down with a refreshing sense that it is a trustworthy history written in a pleasing manner by one who has a wide grasp of his subject.

A NEW MATERIA MEDICA.

An Introduction to the Study of Materia Medica. Being a short account of the more important crude drugs of vegetable and animal origin. By Henry G. Greenish, F.I.C., F.L.S. With 213 illustrations. Pp. xxi + 511. (London: J. and A. Churchill, 1899.)

THE position of Mr. Greenish as Professor of Materia Medica and Pharmacy to the Pharmaceutical Society of Great Britain has enabled him to produce in the book before us a very useful aid to the students attending his lectures, as well as a valuable handbook to the subject for the use of those of riper years. In his preface the author is careful to explain the meaning of the term *Materia Medica*, and to qualify the meaning of the words "crude drugs" as distinct from those that have been subjected to preparation. In this connection he says:

"The term *Materia Medica* literally interpreted signifies all remedial agents of whatever kind, but it is more commonly used to designate that department of medicine devoted to the consideration of simple medicinal sub-

stances known as 'drugs.' In medicine the term is usually employed in this sense, but in pharmacy it is generally understood to include only those drugs that are derived from the animal and vegetable kingdoms, and have not undergone any process of elaboration whereby their characters have been materially altered; such drugs are termed crude drugs. Thus the poppy capsule is a crude drug, and opium, which consists of the dried latex of the unripe capsule, is also classed as a crude drug; but the alkaloid morphine, which is the chief constituent of opium, and can be extracted from it only by a comparatively elaborate process, is not regarded as such. Similarly the resins, oleo-resins, gum-resins, various dried juices, &c., are included amongst the crude drugs. The term is also extended to certain vegetable extracts imported from distant countries in which alone they are prepared, even if they have been partially purified, as, for instance, Cutch and Gambier, although similar extracts prepared in this country would no longer be considered as crude drugs."

This explanation will serve to show the nature and aim of Mr. Greenish's work, which is carried through with much distinctness, and each subject is treated in the clearest possible manner and on the same system throughout.

The arrangement of the subjects under the headings of leaves, flowers, fruits, seeds, woods, barks, resins, oils, and so on, is a novel one in works of this kind, so far as English publications are concerned, and for students' purposes it is perhaps the best that could be adopted, especially with the aid of the tabular classification according to the natural orders, which Mr. Greenish gives at the end of the book; but we are inclined to think that this classification would have been more useful, especially to those with a botanical knowledge, had it been arranged in scientific sequence rather than alphabetical, and, further, to have separated the plant products from those of animal origin. This classification, however, will be found of much use, inasmuch as one sees at a glance what medicinal plants are included in any given order, together with a statement as to what part of the plant is used and a reference to the page where the description is to be found.

That the arrangement of each individual subject under its special head is the best that could have been devised there can be no possible doubt. Each drug appears first under its English name, as, for instance, Red Rose Petals in large capitals, followed by its Latin equivalent *Petala Rosae Gallicae*; or, again, Foxglove leaves, *Folia digitalis*. Following these are paragraphs under the heads of source, &c., description, constituents, and uses, and, where necessary, substitutes and adulterations. The whole is written in such a clear style, and in such plain language, that there is no difficulty in understanding at once what is intended. Moreover, the summing up of the description and the points to be observed by the student are terse yet sufficient, and being printed in italics at once catch the student's eye. Thus under *Chiretta* (*Swertia Chirata*) the following occurs:

"The student should observe—

- (a) The purplish-brown colour of the stem.
- (b) The large continuous pith.
- (c) The intensely bitter taste.
- (d) The opposite leaves.
- (e) The bicarpellary, unilocular fruits."

The first three characters will suffice to distinguish the genuine drug from other species of *Swertia* which some-